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ABSTRACT

Competency based teacher education (CBTE) has generated much controversy. Among its accomplishments, CBTE has provided a visible alternative to conventional teacher education programs. It has forced developers of programs to think beyond the traditional programs. The controversy has required educators to look for new ways of improving educational programs. CBTE provides an emphasis on the real world of schools and their specific needs and objectives and an emphasis on explicitness and openness which has demanded new kinds of communication both within and outside the profession. CBTE is recognized to have major problems, both substantive and political. One of these is that it is not applicable to all content areas. Also, there is a recognized difficulty in first determining competencies required and then finding effective ways of teaching them. Finally, measurement is always a problem. Despite these concerns, CBTE is viewed as a promising alternative form of teacher education. (Several specific recommendations concerning CBTE are included in the Council's report.) (JMF)

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Competency Based Teacher Education: Toward a Consensus

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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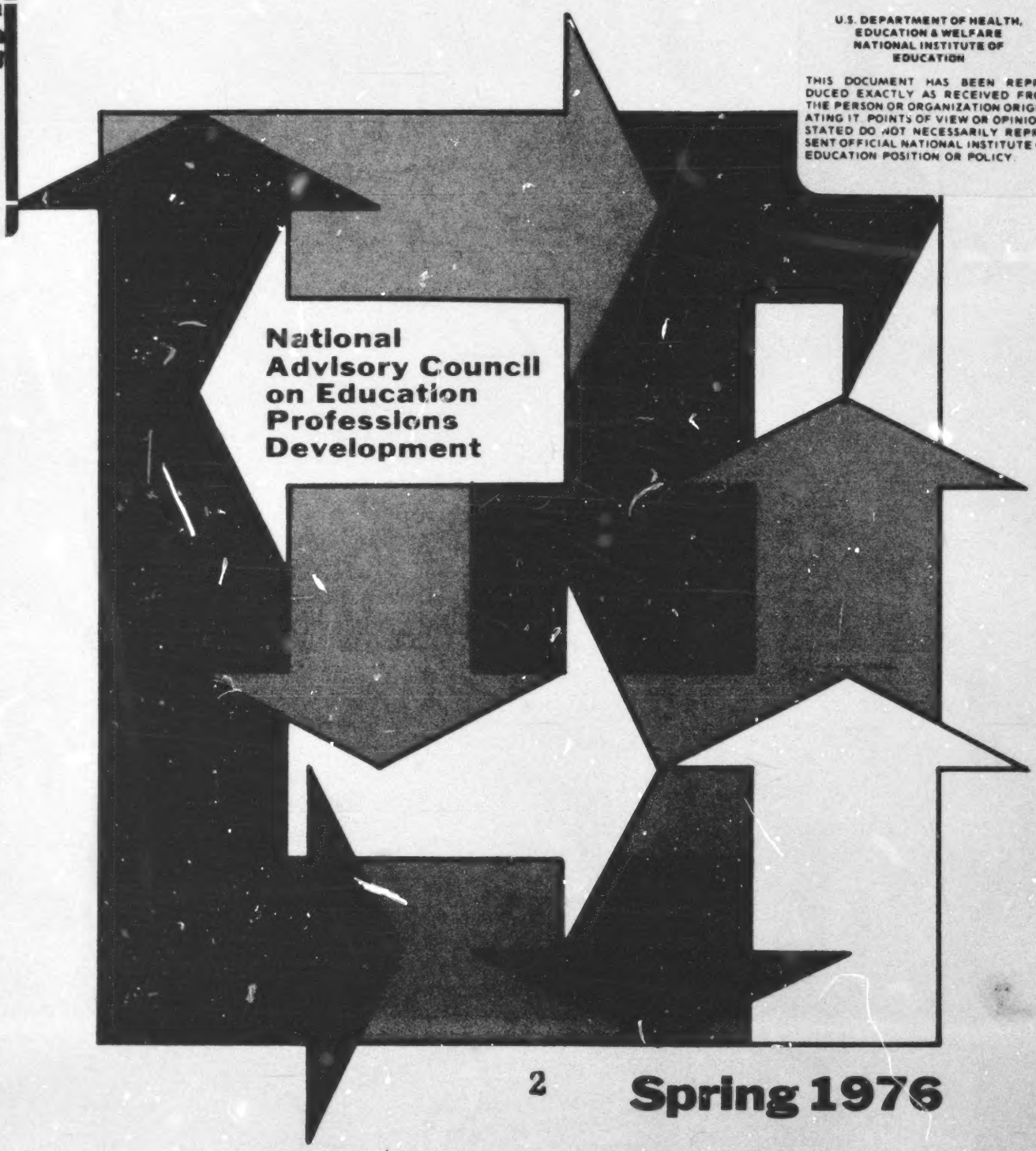

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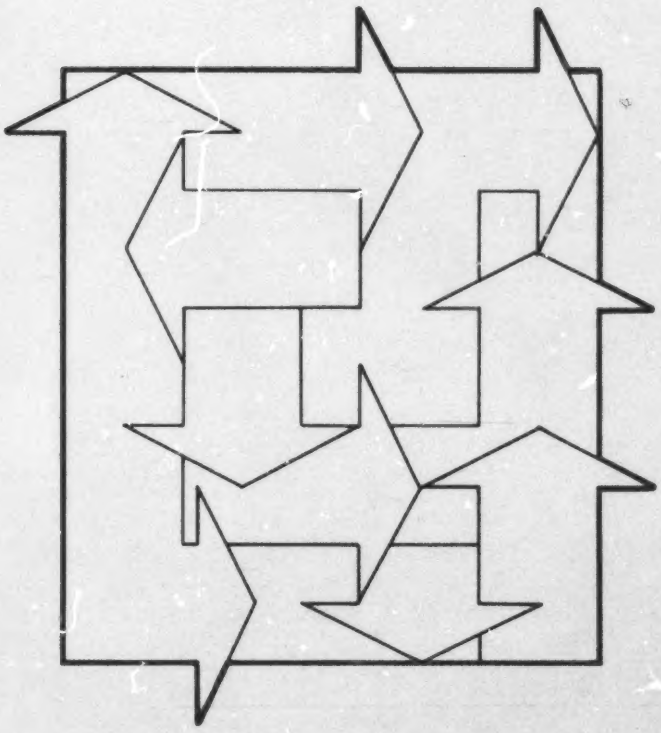
Spring 1976

Competency Based Teacher Education: Toward a Consensus

by the
National Advisory Council
on Education Professions Development



Spring 1976

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Preface

When an airline talks about its Whisperjets, it does not follow that the jets truly whisper or are more quiet than other noisy jet planes.

When educators talk about competency-based education, it does not follow that the new process truly is based on specified competencies.

Introduction

> As long as CBTE is treated as an hypothesis, it makes good sense to provide [Federal] financial support for this kind of experimentation, although we view with some trepidation the excess of enthusiasm which considers CBTE to be a validated conclusion, a claim not even its supporters make for the movement.*

The focus in this report is on the merits of Competency Based Teacher Education as a mode of improving the process of teacher education, and a drive for consensus among the advocates and critics of CBTE.

-- Walter Tice
Chairman

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* National Advisory Council on Education Professions Development, Staffing the Learning Society: Recommendations for Federal Legislation, (Washington, D. C., April 1975), p. 12.

Competency Based Education -- What Is It?

As the name suggests, competency based education deals with competencies which a student is intended to master. The same idea is contained in other names for the same concept, whether it is performance-based education (PBE), which suggests that the student must be able to perform certain specified tasks or skills, or whether it is criterion-referenced instruction (CRI), which suggests that the student, at the successful completion of the course, must meet specified criteria.

What all of these names have in common is the focus on mastery, expressed in terms of objectives, goals, or skills to be mastered. The concept has appeal and it is central to one of the important roles of all teachers: through input of the teacher's skills, patience, and educational techniques eventually all (or most) students will master the desired skill, although in some cases it may take much longer than in others. To the extent that a democratic society puts a high value on a broadly literate and educated citizenry, the focus on mastery learning is highly desirable, much to be preferred to the competing educational concept which calls for major segments of each class to get a grade of D (barely passing) or F (failure). Mastery learning puts a premium on achievement as juxtaposed to failure; it contributes to

so-called grade inflation because most students get A's (excellent) in recognition of their mastery, as juxtaposed to the traditional practice of grading on a bell-shaped curve which assumed that only a few students would achieve excellence and a roughly comparable number would fail the course as measured by whatever tests were employed.

Competency Based Teacher Education

In teacher education, this could mean that all prospective teachers will eventually master all of the required skills and will thus be credentialed, although in fact some of them may take so long to achieve mastery that they may be less desirable employees than those who progress at a normal rate (or faster). In practice, the argument is not very loud because there is vast disagreement as to which skills are to be mastered, how they are to be assessed, and whether the assessment is meaningful and truly related to the skills a teacher needs on the job.

The idea of competency based teacher education is intended to be a sharp contrast to the conventional approach in American education which puts the emphasis on time spent in preparation or the accumulation of credits, units or hours of instruction. The typical bachelor's degree in education, like other baccalaureates, is based on a minimum

of 120 Carnegie semester hours (for which there are various equivalencies of quarter units, etc.). Teachers in most States cannot be certificated (licensed) unless they have attended the requisite number of semester hours, or taken a specified sequence of courses.

The best known definition of CBTE was provided by Stanley Elam in 1971.[1/] Elam described five essential elements of competency based teacher education. They include:

1. Competencies should be derived from a meaningful base, and they must be stated in advance so as to make possible a specific assessment of the student's behavior.

2. Criteria that are to be used in assessing competencies are to be congruous with the competencies, made public in advance and explicit enough to take into account the demonstration of a competency under specific conditions.

3. Competency assessment should use the student's performance as evidence, taking into account his prior learning history. The assessment should strive for objectivity.

4. A student's rate of progress through any given program should be dependent upon his demonstrated competency rather than the conventional system of completing courses.

5. Any instructional program should be designed to facilitate the development of competency as well as to take into account the student's achievement as he progresses through the program.

These are the basic ingredients of competency based education as they are commonly understood. CBTE asks of educators that they

stop using what some consider to be "false" indicators of student achievement (grades and courses). Instead, teacher educators are supposed to clarify their expectations for students, and to focus on developing measurable objectives for student learning.

The simplicity of the idea, which is based on input-output analysis of tasks, is in contrast to the actual difficulty of doing it. Specifying competencies for certain jobs, developing methods to teach them, and measuring the effectiveness of the teaching methods used, are extremely complicated activities. Moreover, confusion sneaks into an understanding of the concept when educators and others attempt to attribute to CBTE additional desirable, though not necessarily essential, elements. Such terms as individualization, personalization, modularization, collaboration, and others have been used when describing competency based education programs, but they are methods, not the idea of CBTE itself.

Finally, political considerations have tended to cloud the picture. Some have tied CBTE to a quest for greater "accountability" among teachers. Thus the merits of CBTE as a process, if any, have often been lost from sight because of the fear of political or economic sanctions. The politics of CBTE have been dealt with elsewhere.[2/] This report is an attempt to assess the state of competency based teacher education.

CBTE As Process

The person attempting to understand competency based education is confronted with labels and descriptions that imply a highly precise, well-honed set of guidelines that lead to an easily determined judgment of whether or not a student is competent. CBTE is and does nothing of the kind. CBTE is a process, not a product; it aims to improve teacher education according to principles consistent with the definition of CBTE already stated. Part of the problem with CBTE is the language itself; in a field of education already replete with acronyms and code words, CBTE appears to many as a gross oversimplification of the extraordinarily complex art and science of teaching.

The enterprise of preparing and certifying teachers is not simple. Partly because of its apparent simplicity, competency based teacher education has caused strong disagreements among educators. It has both advocates and equally strong critics. Nevertheless, the press for competency based programs has led to the consideration of very basic questions about procedures and resource allocation in teacher education.

Consensus regarding the goals of a program is basic to the competency based approach; yet, as has been often demonstrated in teacher education, this consensus is not easily obtained. There are at least four different schools of thought on how teacher education program goals

or competencies should be derived.

1. One approach is to derive competencies from some general theory of teaching. While these competencies seem particularly logical since they are derived from a unified conception of the teacher's role, they may possess little practicality in the real world of teaching.

2. At the other extreme, the issue of goal orientation may be avoided by deriving competencies from task-analyses of teachers in the real world. Although teachers trained in these competencies may be particularly effective in one environment, they may not be able to transfer their teaching skills to other environments. Additionally, programs based on these task-analyses may do more to preserve a status quo than contribute to the development of better approaches to teaching. Broudy has addressed this possibility and warned that in attempting to close the gap between theory and practice, some programs may eliminate theory.[3]

3. Others insist that competencies must be derived from classroom research. Teachers would receive training in those behaviors which have been demonstrated to have a beneficial effect on students. However, Medley's review of the professional literature covering forty-three years found that only 2 percent of the studies measured pupil growth.[4] Rosenshine and Furst's more recent review further illuminates the paucity of research on which to base teacher education programs.[5] Schalock does not even encourage additional research efforts in determining correlations between teacher behavior and learning outcomes in children; he maintains that there is "no hope considering the near infinite array of permutations possible between particular teaching behavior, particular learning, particular learning outcomes, particular teachers...."[6]

4. Finally, a "competency-based" program may be created from an existing teacher education program through a combination of label changes and minor alterations, using existing courses and criteria, quickly restated as competencies.

It is generally recognized by all parties concerned that the description of competencies is a difficult task. Competency definers seem to fall into two groups: one produces a set that is long and specific while the other produces a set that is brief but abstract.* "Members of neither group seem to like or even to understand what the other produces."[7] The result is a lack of consensus over the competencies teachers need as well as the appropriate methods of teaching and measuring them. Adherents of minute precision in measurement may believe it is necessary to measure whether, for example, a teacher is able to take attendance accurately on five consecutive school days. While this behavior can be precisely evaluated, its relevance to effective teaching is questionable. The generation of, training in, and evaluation of 1,500 other similarly specific teaching competencies not only does not strengthen, but is likely to undermine the impact and acceptability of a teaching certificate.

While educators may disagree over precision and specificity in CBTE, there appears to be general agreement over the continued need to improve quality and efficiency in the process of educating teachers for differentiated teaching roles, especially in a period of restricted resources.

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* For an example of a long and specific list see Appendix B, for a brief list see Appendix C.

More Effective Use of Resources

The last decade in teacher education has been characterized by resounding efforts to break with the past. There is general agreement among educators that teachers cannot be Renaissance people, all things to all learners, and that we need a more realistic approach to teacher education. Moreover, the new era in education demands unusual economies.

Research and opinion in the last decade, both from within and without the education community, tend to confirm that the needs or interests of learners and the abilities of teachers often are different. The myths of the "average student," the "average teacher," the "average school," the "average community," the "average American" -- these have largely been demolished in the last decade. This represents a significant departure from traditional thinking. It also presents an enormous challenge to the allocation of educational resources according to certain priorities.

Whereas the 1960's made unprecedented demands on schools, teachers, and teacher education institutions to respond to a vast number of goals and needs, the 1970's have brought a gradual recognition that no single type of educational institution can satisfy all of our educational needs. In 1975, partly because of the new press for economies, there is a slowly developing trend for institutions to limit their focus,

more carefully to conceive of their purpose and to improve their use of institutional resources. In this way CBTE may offer promise for the more effective use of institutional resources. Some believe that CBTE may be an effective vehicle for training teachers for different learners in different educational environments.

Although the competency based approach does not necessarily result in effective or superior programs, some believe CBTE makes it "easier to tell."8/ Likewise, although competency based programs do not necessarily result in the preparation of effective or superior teachers, many believe CBTE makes it easier to judge the ability of a teacher to perform under designated circumstances. The credibility attached to a teaching credential based on demonstrated performance of publicly and explicitly stated competencies may be more compelling than that attached to credentials awarded on the basis of other criteria.

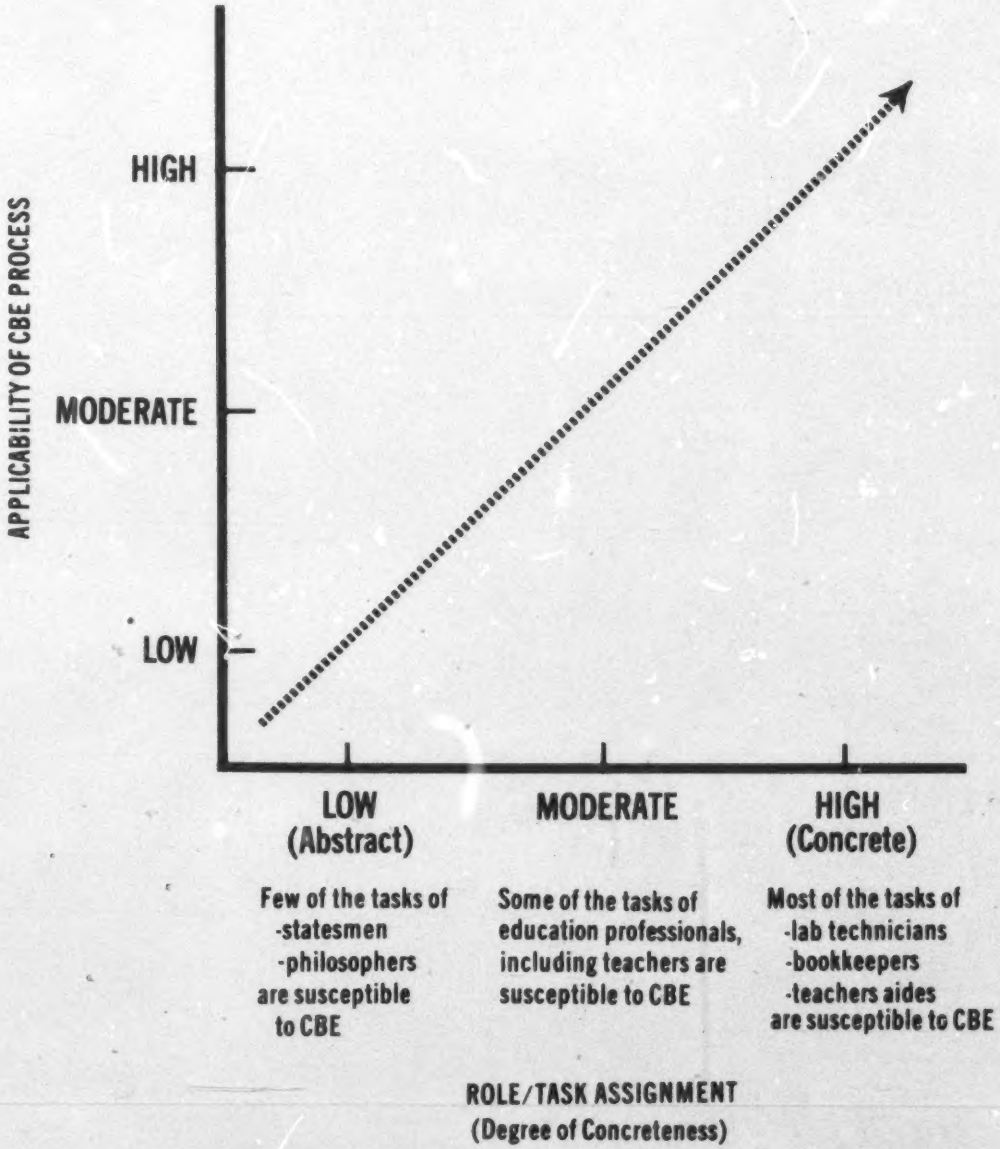
In practice, however, the certification of teachers is not now based on CBTE or similar performance criteria, probably a tacit admission that it cannot be done. Although some States claim to do so, we know of none which now issue teaching certificates based on performance criteria, analogous to the way drivers' licenses are based on a demonstration by the applicant who drives through a prescribed series of events under the eye of an inspector representing the State.

In this period of accountability demands, credibility gaps, and mania for measurement, certification and credentialling based on demonstrated competent performance holds a special appeal. Its very appeal, however, gives rise to a need for caution in its use. CBTE has a different applicability to different kinds of tasks.

Differential Applicability of CBTE

CBTE does not lend itself equally to all aspects of the teacher's roles. Programs designed to teach manual skills are especially open to the use of competency based education, again analogous to examinations for a driver's license. Thus, those skills a teacher needs -- whatever kind of teacher -- of a manual or physical nature may benefit from CBTE specification. It is possible to extend the process to the cognitive realm. For example, accountants and bookkeepers must learn in accordance with a fairly well developed set of operations and procedures. In fact, someone as highly skilled as an astronaut must possess not only a discrete set of physical skills, but also a highly complex set of cognitive or mental skills. There is a vast gray area of skills between the manual and the intellectual that may be moderately susceptible to CBTE. At the opposite extreme, highly intellectual and creative aspects of teaching are not very susceptible to CBTE. Figure 1 (p. 11) graphically displays the range of skills open to competency based education.

Figure 1: A Proposed Relationship Between Role/Task Assignment and the Applicability of a Competency Based Education Process


APPLICABILITY OF CBE PROCESS
HIGH
MODERATE
LOW
LOW (Abstract)
MODERATE
HIGH (Concrete)
Few of the tasks of -statesmen -philosophers are susceptible to CBE
Some of the tasks of education professionals, including teachers are susceptible to CBE
Most of the tasks of -lab technicians -bookkeepers -teachers aides are susceptible to CBE
ROLE/TASK ASSIGNMENT
(Degree of Concreteness)

What we are suggesting, in plain English, is that performance criteria -- competencies -- can be measured most readily if they are manipulative; and that they are increasingly difficult to describe (and, a fortiori, to measure) as they increase in abstraction. Thus our society tends to use performance criteria ("sink or swim") in Red Cross lifesaving or swimming certificates, in assessing machine operatives or other skilled workers, but moves away from performance criteria in the professions with intellectual and abstract content. Indeed, in recent months where there are attempts to assess or measure such content, the tests and assessment techniques are under fire; witness the use of intelligence tests, aptitude tests, including the National Teacher Examination used in some States to screen teachers seeking certification.

It is easier to count split infinitives than to determine the breadth and scope of a teacher's education and preparation, just as it is easier to ask if the teacher knows how to read a mechanical drawing than it is to arrive at a genuine judgment as to whether he or she knows how to teach in the professional, versatile meaning of the word "teacher." Accordingly, there seems to be better progress in defining competencies under the auspices of vocational education, but less enthusiasm in colleges which also emphasize the liberal arts.

Figure 1 demonstrates that highly creative and intellectual tasks are not very susceptible to highly structured assessment. Thus, the efforts of statesmen and philosophers will defy CBE. At the other extreme, most of the tasks of laboratory technicians, mechanics, and teacher aides will be susceptible to CBE. Teachers occupy a middle ground: some of their tasks will be susceptible to CBE (such as how to take attendance) while others will not (such as the best way to teach the subject). The Appendices to the present report illustrate this.

There are aspects of most teacher preparation programs where it would be either inappropriate, pointless, or impossible to delineate precisely the material to be mastered. Suppose, for example, one is attempting to train personnel for a day-care center. Consider some of the questions that might be important in a day care worker's response to the perceived misbehavior of a child.

1. What is the child's previous history of behavior?
2. Are there other children involved and what is the importance of these relationships?
3. Is the behavior typical of the child's age, or should it be considered "abnormal"?
4. What are likely to be the consequences of different responses by the day care worker in this particular instance?
5. Is the goal to help this particular child, or to relate to a situation that involves a large group of children?

As can be seen by this example, the knowledge and skills required by the day care worker are not discrete, and probably cannot be specified in their entirety. For details, see Appendix A.

However, suppose it were argued that as we advance in the understanding of human behavior, it will be possible to delineate most of the skills needed by certain kinds of teachers? If this were possible, one would have to analyze the tasks a teacher is required to perform in order to see which parts of the job are open to the kind of analysis implied by CBTE. One must consider the feasibility of applying a competency based education process to the training of students where the content demands creative and innovative responses. A CBTE program in this instance might be so highly specified as to inhibit autonomous and creative responses by a teacher.

The successful performance of important jobs -- and we believe teaching is one of society's most important jobs -- turns on the ability of the performer to respond in a creative fashion. Teachers are expected to be creative in meeting the unique needs of individual students. Accordingly, it does not seem to us educationally sound or feasible to apply CBTE rigidly to all aspects of a teacher's role.

Toward A Consensus

As we have pointed out, different types of institutions are attempting to utilize CBTE to improve their programs. When this occurs three things can happen:

1. The procedures for using CBTE may be so abstract or so general that they render the process meaningless.

2. At the opposite extreme, the procedures may be so specific, so detailed, that they become restrictive, dehumanizing, and unsuitable.

3. There may emerge a balanced, thoughtful compromise and consensus that applies CBTE according to the appropriateness of the tasks specified.

As a case history, we can look at the experience of Mars Hill College. In this instance, they described:

> A competency based curriculum is one where the competencies expected of all students are agreed upon and defined, and courses or experiences are designed to assist the student in becoming competent.[9]

Resisting the temptation to delve into the content of that statement, we push further and note the expectations of a "competent" graduate, as stated in one of several criteria:

> A graduate of Mars Hill College comprehends the major values of his own and one foreign culture, can analyze relationships of values between the cultures and can appraise the influence of those values on contemporary societal developments in the cultures.[10]

This basic statement probably would find wide acceptance among most liberal arts colleges, competency based or otherwise. At Mars Hill the abstract nature of the statement gave rise to problems in assessing student performance, admittedly the key to a successful program. Mars Hill has not solved the problem of assessment because the faculty has no way of determining, on a consistent basis, whether students have acquired the desired competence. Yet assessment is essential.

Staff members of Mars Hill warn of going too far in the opposite direction:

> The competence criteria can be so explicit that they can circumscribe all else. Such criteria would largely kill student-initiated experimentally based learning options.

This alternative can be illustrated by another example which goes into a level of detail so specific and so trivial as to make a mockery of the competency based idea. The Association for Educational Communications and Technology lists more than 600 discrete competencies required of a technician in media management. Below are listed just four examples* which demonstrate the potentially harmful impact of too much detail, and the unfortunate idea that mastery implies a terminal achievement on which the competent technician may rest when the emphasis should be on continuing personal and occupational growth:

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* For further examples of redundancy see Appendix B.

* Operates typewriter to type inventory.
* Checks personal schedule to schedule time and date.
* Counts number of staff members to ascertain facilities needed.
* Uses telephone to call repairperson.[11]

The list could go on but the point, hopefully, is clear. The detailed application of the competency based process to program development can be counterproductive. Following such a regimen would probably be boring and demeaning to all but the least gifted technician.

We can see from these extremes that the competency based procedure is not simple to use. Instead, competency based education is a broad process that is applicable to some areas, potentially applicable to others, and perhaps not applicable at all to still others. To a large degree, the content of an educational program will set distinct limits on the applicability of a competency based process.

Conclusions and Recommendations

CBTE has generated much controversy. Among its accomplishments, CBTE has provided a visible alternative to conventional teacher education programs. It has forced developers of programs to think beyond the traditional four-year, one-hundred-twenty-semester-hour program leading to a baccalaureate degree and certification. Although it may have opened a Pandora's Box, CBTE has required educators to

look for new ways of improving educational programs. For example, CBTE suggests an emphasis on the real world of schools and their specific needs and objectives. The emphasis on explicitness and openness has demanded new kinds of communication both within and outside of the profession. Finally, the controversy itself may have helped to focus on needed improvements in the process of educating teachers. Old shibboleths have been re-examined and new vitality has been brought to the total enterprise.

CBTE has major problems, both substantive and political.[12/] Many agree that CBTE is not equally applicable to all content areas. Some are so opposed that they reject it entirely. All recognize the considerable difficulty in first determining competencies required and then finding effective ways of teaching them. Finally, adequate measurement is always a problem. Despite these caveats, however, CBTE is viewed by many as promising, as an alternative form of teacher education.

Findings and Recommendations

1. The United States Office of Education should lend its weight to CBTE by making it clear that this effort is not necessarily the panacea some have suggested but is an experimental process to improve teacher education.

2. CBTE deserves careful experimentation and research under the aegis of the National Institute of Education in the continuing search for a solid scientific base for teacher education.

3. In many States there has been a premature rush to mandate CBTE as a condition for teacher certification; responsible bodies should lead the effort to reevaluate CBTE and to establish more realistic expectations. There simply is not sufficient evidence to promote CBTE as the criterion for teacher accountability.

4. We recommend that the new Higher Education Act include a provision for a thorough review and analysis of current problems and opportunities concerning the Federal role in education professions development. Such an inquiry should take into account the issues raised by CBTE.

5. We would prefer it if the CBTE movement were retitled "role" or "task analysis" rather than the grandiloquent but misleading "competence-based" or "performance-based" education, whether for teachers or for others. We are concerned that the name of the CBTE movement, with its emphasis on the word "competence" (or "performance"), may provoke hopes and imply promises which are not likely to be fulfilled in those areas of the teacher's role which are of paramount importance, i.e. the affective and intellectual domain as contrasted to the necessary but readily observable skills which verge toward the rountine or technical.

Appendix A

The Child Development Associate Competencies

Although the Office of Education has invested great sums of money in developing CBTE, there is no visible strategy, no overall plan which emerges from this effort. Nobody at USOE can provide a defendable figure as to money invested to date.

By way of juxtaposition there is the Office of Child Development in the Department of Health, Education, and Welfare which has invested through 1975 about $10 million to develop a new category of professionals called Child Development Associate. A CDA is defined as a person who is knowledgeable about young children and who is directly responsible for their daily activities. CDAs, according to the Federal sponsors, "are to be assessed and credentialed on the basis of their ability to demonstrate the knowledge, skills and attitudes required by their role...."*

Since CDAs obviously must have some of the same skills as teachers, especially teachers of very young children, and since the sponsoring agency is part of the same Federal Department of Health, Education, and Welfare as is the U.S. Office of Education and the National Institute of Education, the comparison may be instructive.

CDAs must have six competencies; like most comparable statements they are very broad:

-- To create a safe and healthy learning environment;
-- To advance children's physical and intellectual abilities;

* The Child Development Associate Training Information Series No. 1, Office of Child Development, Office of Human Development, U.S. Department of Health, Education, and Welfare, 1974.

-- To develop a positive self-image in children;
-- To build a healthy group environment;
-- To coordinate home and center experiences;
-- To understand the administrative needs of the center.*

In an attempt to describe the competencies in greater detail--all prospective CDAs must be assessed in order to determine whether they can or cannot perform the stipulated tasks--there follow several pages of elaboration. For illustrative purposes we reproduce the one dealing with advancing physical and intellectual competencies:

> 1. Use the kind of materials, activities and experience that encourage exploring, experimenting, questioning, that help children fulfill curiosity, gain mastery, and progress toward higher levels of achievement.
>
> 2. Recognize and provide for the young child's basic impulses to explore the physical environment; master the problems that require skillful body coordination.
>
> 3. Increase knowledge of things in their world by stimulating observation and providing for manipulative-constructive activities.
>
> 4. Use a variety of techniques for advancing language comprehension and usage in an atmosphere that encourages free verbal communication among children and between children and adults.
>
> 5. Work gradually toward recognition of the symbols for designating words and numbers.
>
> 6. Promote cognitive power by stimulating children to organize their experience (as it occurs incidentally or pre-planned for them) in terms of relationships and conceptual dimensions: classes of objects; similarities and differences; comparative size, amount, degree; orientation in time and space; growth and decay; origins; family kinship; causality.
>
> 7. Provide varied opportunities for children's active participation, independent choices, experimentation and problem-solving within the context of a structured, organized setting and program.
>
> 8. Balance unstructured materials such as paint, clay, blocks with structured materials that require specific procedures and skills; balance the use of techniques that invite exploration and independent discovery with techniques that demonstrate and instruct.

---

* Jenny W. Klein and Rita Weathersby, "Child Development Associates: New Professionals, New Training Strategies," Children Today, September/October 1973.

9. Stimulate focused activities: observing, attending, initiating, carry through, raising questions, searching answers and solutions for the real problems that are encountered and reviewing the outcomes of experience.

10. Support expressive activities by providing a variety of creative art media, and allowing children freedom to symbolize in their own terms without imposition of standards of realistic representation.

11. Utilize, support and develop the play impulse, in its various symbolic and dramatic forms, as an essential component of the program; giving time, space, necessary materials and guidance in accord with its importance for deepening and clarifying thought and feeling in early childhood.*

A mere reading of these eleven elaborations provokes numerous questions.

* "The Child Development Associate Competencies," part of The Child Development Associate Training Information Series No. 1, op.cit.

Appendix B

COMPETENCIES FOR TECHNICIANS IN MEDIA MANAGEMENT

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According to AECT:

The Worker Instruction Level for each task is indicated by the number preceding the task statement. For the "specialist," levels 5-8 are shown. For "technicians," levels 3-5 are listed. In some instances, tasks will not be assigned a level because the specialist or technician may not be responsible for actually performing the activity, but must be familiar with it.

ORGANIZATION MANAGEMENT OUTCOMES.

KEEPING OF PURCHASE RECORDS/ACCOUNTS

Deducts amount of purchase to record current balance
Operates card punch machine to record purchase
Operates adding machine to total monthly expenditures
4 Specifies delivery time/place to prepare purchase orders
4 Estimates cost per item to prepare price list
4 Signs forms to prepare purchase orders
4 Supervises secretary to prepare purchase orders
5 Supervises bookkeeper to credit district accounts

KEEPING OF WORK RECORDS/PAYMENT RECORDS

Writes number of hours worked to provide record for payment
Computes and records payments to keep record
Computes time worked to determine payment
3 Assesses fee using fixed rates to pay narrator
3 Computes total hours worked to provide payment to operators

KEEPING OF STUDENT RECORDS

Makes mark in register to record student presence
Records errors and frame number to record student progress
Writes post-test score to add to student record
Writes on student record to note student attendance
5 Assigns letter grades to record student progress

KEEPING OF MISCELLANEOUS RECORDS

Lists number of recordings made to keep record of work
Checks list to note returned questionnaires
Analyzes circulation records to compute usage figures
Adds up time equipment used to compute usage figures
Writes information on film in log book to record receipt of film
Writes comments of audience to record recommendations
Writes date in log book to record preview data
Collects completed work orders to have record of operation
Compares extant list with previous to compile list of new materials
3 Writes information on assignment to keep record
3 Receives forms from district to compile county totals
5 Supervises analysis of forms to compile county totals

BILLING OF CLIENTS

Writes materials and time spent to provide record for billing
5 Supervises secretary to bill districts

FILING OF MATERIALS

Files broadcast log to maintain record
Files telex sheets to maintain record
Files used printing masters to keep records/files
Files purchase orders and vouchers to keep records/files
Files purchase orders to keep track of those not received
Operates typewriter to update file cards
Files new information to update files
Files order sheets in folder to keep records/files

5 Writes memos to management to acquire funds for operation
5 Justifies expenditures to acquire funds for operation
5 Contacts colleagues to identify appropriate funding sources
5 Negotiates with management to acquire funds for operation
5 Reads budget to identify internal support money
5 Reads newsletters/money statements to identify possible money sources
5 Reads journals to identify appropriate funding sources

COMPUTING BUDGETS/FINANCIAL RECORDS

3 Operates adding machine to compute total budget
4 Performs cost analysis to compute cost product data
4 Calculates money available to compute budget
4 Analyzes production plan to develop production budget
4 Estimates cost for each segment to develop cost analysis
4 Adds estimated costs for segments to develop cost analysis
4 Analyzes pay schedules to compute staff budget
4 Assesses equipment needs to compute equipment budget
4 Assesses materials needs to compute materials budget
5 Projects system growth to develop projected budget
5 Analyzes work plans to develop supporting budget
5 Lists staff time and rates to determine staff budget
5 Lists equipment needs and costs to determine equipment budget
5 Lists materials needs and costs to determine materials budget
5 Totals costs to determine total budget
5 Assesses expenditures to write financial plan
5 Compiles sub-budgets to develop budget draft
5 Incorporates improvements in budget to develop final budget
4 Examines alternate systems to develop initial budget
3 Lists projected equipment needs to provide budget information

APPROVING/EVALUATING OF WORK/PRODUCTS

3 Reads bill from producer to approve for payment
4 Submits proposal to administration to approve for submission
4 Reviews purchase orders to approve for purchase
4 Reviews bills to certify for payment
4 Reads notification from board to approve vendor selections
5 Reads progress reports to evaluate project progress
5 Compares products/activities with goals to evaluate project performance
5 Compares products/activities with goals to assure quality of work
5 Compares products/activities with goals to suggest improvements
5 Compares past and present budgets to approve/disapprove budget
5 Compares budget and past performance to approve/disapprove budget
4 Supervises staff to insure work is completed
5 Talks with staff to evaluate programs
5 Discusses with advisory committee to evaluate program improvements

DETERMINING NEED FOR EQUIPMENT/FACILITIES/PERSONNEL/PROCEDURES

Counts number of staff members to ascertain facilities needs
4 Analyzes production plan to determine equipment needs
4 Searches in file to select suitable location
4 Analyzes number and type activities to ascertain facilities needs
4 Reads floor plan to examine current facilities
4 Reads current equipment inventory to identify equipment on hand
4 Analyzes production plan to determine talent/crew needs
5 Analyzes center inventories to list staff, equipment and materials
5 Analyzes relations and functions to define duties of personnel
5 Examines work of organization to identify how facilities can help
5 Examines staff communications/interaction to identify how facilities can help
5 Analyzes organization activities to ascertain equipment needs
5 Assesses cost restraints to determine limits of project
5 Listens to staff desires to ascertain facilities needs
5 Listens to staff to ascertain equipment needs
5 Speaks to technical workers to ascertain jobs to be done
5 Speaks to technical workers to ascertain workers needed
5 Selects three architects to discuss facilities in depth

MAKING AVAILABLE EQUIPMENT/FACILITIES/PERSONNEL

4 Analyzes purchase requests to determine which catalog to search
4 Reviews new employee papers to determine size/number of sessions
4 Makes arrangements to transport crew/talent to location
5 Estimates staff needs to fill described jobs
5 Writes memos to advise hiring
4 Calls appropriate agency to schedule location
4 Calls warehouse to rent warehouse for storage
5 Selects personnel to fill key positions in structure
5 Speaks to realtors to seek additional space off campus

CHECKING FOR ACCURACY

Compares new materials with invoice to check that order is complete
Checks invoice with purchase order to ensure both are correct
4 Checks typed budget to ensure correct

DETERMINING AND ENFORCING TIME CONSTRAINTS/DEADLINES

3 Writes time schedule to assign completion dates
4 Defines PERT chart to assign completion dates
4 Analyzes time limits to determine time constraints
5 Analyzes activities to determine time for each activity
4 Calls contractor periodically to ensure product on time
5 Speaks to technical workers to ascertain amount of time needed
4 Measures time taken to compute time saved
5 Reads proposal to determine dates for evaluation reports

WRITING TIME/PERT CHARTS

4 Combines times to develop project timeline
4 Analyzes flow to identify major steps
4 Writes chart to formalize PERT schedule
5 Writes operations plan to organize course development
5 Estimates time factors to organize course development
5 Analyzes relations of activities to develop PERT schedule
5 Analyzes time for each activity to develop PERT schedule
5 Analyzes project limits to develop PERT schedule
5 Assigns completion dates to design project deadlines

SELECTION OF PERSONNEL/MATERIALS/EQUIPMENT AND PROCEDURES FOR MANAGEMENT

4 Writes form letter to inform applicants of rejection
4 Evaluates list of contractors to select most appropriate
4 Lays out samples to select equipment/materials vendors
5 Translates guidelines to select committee members

3 Compiles information on new materials to add to files
Alphabetizes check-out cards to prepare to file
Arranges shelf list cards to prepare for filing
Alphabetizes catalog cards to prepare for filing

MAILING/SHIPPING OF MATERIALS

Prepares film cartridge to mail to processor
Copies information from list to address questionnaire
Operates typewriter to type film mailing label
4 Gives instructions to have materials distributed
Tells secretary to transmit letter to applicants
4 Discusses with supervisor to define shipping arrangements

TYPING

Operates typewriter to type inventory
Operates typewriter to type order sheet
Operates typewriter to produce copy of business letter
Operates typewriter to type purchase orders
Operates typewriter to type equipment list
Operates typewriter to type repair request
Operates typewriter to type broadcast logs
Operates typewriter to type promotional material
Operates typewriter to type form request
3 Operates typewriter to type catalog
Uses tape recorder and typewriter to make transcript of proceedings

PERFORMANCE OF MINOR CLERICAL ACTIVITIES

Puts staples on folder to make storage envelopes
Operates spirit duplicator to make copies of inventory
3 Writes list of titles to prepare specialist preview list
3 Writes list of titles to prepare evaluation committee preview list
5 Supervises personnel to receive equipment/materials

ORDERING OF MATERIALS

Mails order form to manufacturer to place materials on order
Writes to producer to request materials for preview
Notes supplies needed to write requisition list
Fills out order form to order materials
3 Writes list of items and dates to order items for preview
3 Arranges materials requested to group order list
3 Lists materials/equipment costs to compile order list for purchase
4 Writes letters to manufacturers to remind of back orders
4 Writes letters to manufacturers to correct wrong orders
Talks with supervisor to report supply needs
3 Informs secretary to order film for purchase
3 Calls box manufacturer to order boxes
3 Calls designer to obtain copy for labels
3 Calls producer to obtain type style for labels
3 Calls printer to order labels
4 Calls unit ordering materials to inform of manufacturer delay
4 Calls manufacturer to confirm order
Checks level of supplies to determine need for orders

PURCHASING OF MATERIALS

3 Sends list to director to purchase materials
3 Sends order forms to district to initiate purchasing cycle
3 Assigns purchase order number to assure payment
5 Writes letter to manufacturer to cancel late orders
5 Reviews equipment order to approve for purchase
5 Compares list prices to determine best price
5 Makes decision to notify manufacturers to cancel late orders
5 Negotiates with management to institute open purchase account

ANALYSES OF ORGANIZATION COMPONENTS

4 Examines forms used to identify needed improvements
4 Examines current routing lists to identify major problems
4 Analyzes service requests to identify service needs
4 Writes memo to departments to clarify service needs
5 Analyzes project personnel/organization to determine decision makers
5 Analyzes manageability of project to determine constraints
5 Matches staff to activities to identify gaps in staff
5 Analyzes relations between functions to develop functional matrix
5 Reads project reports to identify current work
5 Analyzes budget submissions to identify new programs
5 Analyzes activities to determine staff/time/resources
4 Discusses with workers to identify major problems
4 Calls departments to clarify service needs

SCHEDULING MEETINGS/APPOINTMENTS

3 Selects meeting time and place to hold demonstration
3 Checks personal schedule to schedule time and date
4 Selects time and place to hold seminar
4 Checks calendar to set dates for evaluations
3 Calls auditorium coordinator to schedule evaluation sessions
3 Calls parents to arrange for meeting
4 Calls applicants to set time and place for interview
4 Calls building coordinator to arrange for room
4 Calls school to arrange for test audience
4 Discusses with training officer to arrange for pilot test
4 Contacts individuals or schools to obtain subjects for study
5 Speaks to students to arrange for lesson simulation
5 Speaks to students to end lesson simulation
5 Speaks with students/teachers to arrange for discussions with visitor

DETERMINING FINANCES/FINANCIAL CONSTRAINTS

4 Analyzes budget to determine money available
4 Analyzes cost of model to determine if feasible
4 Analyzes budget to determine cost constraints
4 Reads budget to discover fiscal resources
4 Submits proposal to contracts office to acquire overhead figures
4 Analyzes study costs to determine money constraints
5 Analyzes monetary considerations to determine financial constraints
5 Reads architect's budget to ascertain proposed cost
5 Analyzes staff needs to determine staff salary needs
5 Analyzes budget to determine resources available
4 Measures costs of instruction to compute money saved
4 Assesses requests for new equipment/materials to determine purchase priority

SEEKING FUNDS

3 Transmits proposal to funding to obtain funds for research study
4 Develops budget to support research project
4 Writes up budget to support proposal

5 Analyzes program projections to determine additions needed
5 Compares equipment on hand and needs to identify equipment to be bought
4 Calls selected applicant to notify of selection
4 Speaks to client to set up review panel
5 Writes report to board of education to indicate vendor selections

ADMINISTRATION/COORDINATION OF PROJECTS

4 Gathers employee information to distribute to new employees
4 Assigns work to staff to meet goals of unit
5 Surveys market potential to decide on number of copies
5 Rereads contract to define desired outcomes
5 Analyzes goals of project to define needed activities/products
5 Translates project activities to develop job descriptions
5 Analyzes unit request to determine need for training
4 Requests course developers to obtain size and type of program
4 Negotiates contract with customer to initiate project development
5 Speaks to staff to identify project interests
5 Listens to outside input to improve product
5 Reads proposal to determine audience for reports

MONITORING/CHANGING OF ORGANIZATION STRUCTURE AND GOALS

4 Analyzes service needs to propose new service operation
5 Proposes new documentation to improve research library
4 Discusses with departments to propose new service operation
5 Listens to feedback to revise structure
5 Discusses with auditor to identify feasible organizational structures
5 Discusses with auditor to identify acceptable organizational structures
5 Confers with colleagues to evaluate structure matrix
5 Confers with colleagues to evaluate new structure
5 Speaks to colleagues to become involved in new ventures
5 Discusses projects/money with staff to identify future priorities
5 Discusses with technical experts to design new organizational model

WRITING OF WORK PLANS/MANAGEMENT REPORTS

5 Analyzes production details to write production plan
5 Analyzes work performed in unit to prepare work plans
5 Assigns work weeks to functions to prepare work plans
5 Estimates work to be performed to prepare work plans
5 Develops staff time/output budget to support work plans
5 Writes progress reports to describe work performed
5 Reviews project progress to present report to management/customer
5 Discusses with staff to revise work plans
5 Converses with students to assign work areas
5 Evaluates student performance to write evaluation report

CLARIFICATION OF MANAGEMENT GOALS

5 Reads assignment outline to clarify general idea of project
5 Reads previous proposals to obtain background information
4 Discusses with client to clarify assignment
4 Discusses with teaching personnel to clarify teaching assignments
5 Consults with client to determine client roles
5 Consults with client to determine company roles
5 Negotiates with funding source to clarify details of proposal
5 Asks questions to clarify general idea of project
5 Instructs customer in logistics to define work/money/time relationships

PERSONNEL MANAGEMENT OUTCOMES.

HIRING OF STAFF

4 Makes recommendations to director to assist in hiring
5 Reads file of prospective staff to attempt to fill staff gaps
5 Reviews application forms to select applicants for interview
5 Reads resumes of current staff to identify possible project staff
5 Reads resumes to select applicants for interview
5 Selects short list of applicants to do initial interviewing
5 Evaluates applications to determine trainees
5 Reviews job applications to make recommendations
4 Calls personnel office to hire shipping personnel
4 Calls unit head to ask recommendations on trainer
4 Calls trainer chosen to notify of selection
5 Identifies field personnel to select program developers
5 Hires personnel to staff research project
5 Speaks with prospective staff to evaluate qualifications
5 Describes project and company to initiate job interview
5 Interviews job applicants to select most suitable
5 Evaluates recommendations to determine best trainer
5 Speaks to current staff to identify possible project staff
5 Questions applicant to ascertain qualifications
5 Identifies appropriate staff to staff proposed program

EVALUATION/ASSESSMENT OF PERSONNEL OUTPUT

4 Supervises student aide to ensure correct performance
5 Assesses staff work to write performance reports
5 Reviews worker evaluation reports to determine acceptance of work
5 Discusses with teacher to praise improved performance
5 Speaks to technical workers to review progress periodically
5 Evaluates employee performance to assess employee progress
5 Discusses with staff to evaluate work performed
5 Observes staff work/products to evaluate work performed
5 Evaluates employee performance to write evaluation report
5 Discusses with peers to determine validity of reports
5 Discusses with worker to determine validity of reports
5 Discusses with supervisor to determine validity of reports
5 Evaluates teaching to assess work of teaching personnel
4 Gives instructions on operation to supervise assistants

ASSIGNMENT OF WORK TO PERSONNEL/OUTSIDE CONSULTANTS

4 Assigns work on daily basis to schedule work loads
5 Assesses work to be performed to approve requests for leave
3 Uses telephone to call repairman
3 Calls talent to request them to audition
5 Calls associate to request assistance in presentation
3 Identifies appropriate persons to ask them to preview films
3 Chooses appropriate narrator to obtain script narrator

ASSISTANCE IN COMMUNICATIONS BETWEEN MANAGEMENT AND STAFF

3 Operates telex machine to communicate with network
5 Writes procedural manual to inform new employees
5 Writes recommendations to suggest promotions and awards
5 Conducts staff meetings to relay administrative directives
3 Talks with new employees to inform of procedures
3 Writes performance reports to inform supervisor
5 Negotiates with personnel department to suggest promotions and awards
5 Discusses with staff to relay/interpret administrative regulations
5 Persuades architect to meet staff to ensure staff input

INTERACTION WITH INDIVIDUALS AND GROUPS

3 Schedules meeting with directors to discuss proposal
4 Attends staff evaluation session to lead discussion
4 Attends evaluation committee meeting to lead discussion
5 Summarizes points made to lead evaluation session
5 Writes suggestions to lead evaluation session
5 Chooses subject matter to encourage seminar discussion
5 Speaks with client group to develop rapport with group
5 Speaks with individual members to reduce specific inhibitions
5 Speaks to project directors to persuade to produce presentation
5 Operates tape recorder and microphone to interview people in
5 street
3 Drives to schools to consult with teachers
5 Advises students to better master teacher relations
5 Explains material to evaluators to lead evaluation session
5 Shows materials to teachers to lead evaluation session

RESEARCH-THEORY OUTCOMES.

COLLATION/SUMMARIZING OF DATA IN PREPARATION FOR ANALYSIS

5 Supervises personnel to ensure correct data collation
Counts responses in each category to summarize data
Tallies responses to summarize data
4 Collates data to measure effects of treatments
4 Prepares tally sheet to summarize data
5 Codes teacher behavior to categorize according to scale
5 Sets up data translation procedure to obtain answers from data
5 Translates objectives to define categories of responses
5 Reads data to determine if categories fit
5 Classifies each response to put responses into categories
5 Listens to tapes of student sessions to summarize tutorial strategies

ANALYSIS OF DATA

4 Speaks with researcher to understand data to be analyzed
5 Supervises personnel to ensure correct data analysis
4 Compares test group with control to analyze effects of treatment
4 Operates calculator to perform statistical analysis
4 Reads statistical tables to perform statistical analysis
4 Computes money/time saved to determine cost effectiveness
4 Divides cost by market to determine unit product cost
5 Sets up data processing procedure to analyze data
5 Analyzes data to measure effects of treatments
5 Translates data into formula to perform statistical analysis
5 Analyzes student errors to evaluate lesson/tutor strategies
5 Analyzes test results to compute effectiveness of TV
5 Performs statistical analysis on data to quantify teacher behavior
5 Performs statistical analysis to measure teacher attitude
5 Performs statistical analysis to analyze data

INTERPRETATION OF DATA

5 Compiles suggestions of educators to suggest new products
4 Compares data analysis with tables to determine significance of data
5 Compares solutions/information to evaluate proposed solutions
5 Analyzes reality test results to revise model
5 Examines objectives/data analysis to interpret meaning of data
5 Analyzes tutorial strategies to identify common elements
5 Analyzes tutorial strategies to identify successful elements
5 Compares observed behavior to model to identify teacher behavior problem
5 Interprets analyzed data to identify most effective technique
5 Identifies similar products to determine competition
5 Evaluates new product specifications to align with educational expectations
5 Evaluates changes in products to determine effect of educational application

DESIGN OUTCOMES.

PRODUCTION OUTCOMES.

EVALUATION-SELECTION OUTCOMES.

DIAGNOSIS OF EQUIPMENT DEFECTS

Tests language lab equipment to locate operating flaws
Uses tube tester to identify defective tubes
3 Operates projector to determine non-functioning part
3 Consults drawing and parts list to identify non-functioning part
3 Operates record player to determine non-functioning part

ASSESSMENT OF MATERIALS

3 Selects time and date to preview presentation
4 Reads memos from teachers to determine materials needs
4 Calls teachers in school to evaluate materials
4 Calls students/teacher in a class to evaluate materials
4 Asks questions to determine application/use
4 Discusses with staff to clarify materials needs
4 Requests content specialists to preview old films
4 Discusses with teacher to evaluate materials available
4 Discusses with teaching personnel to evaluate success of course
5 Asks students questions to determine if objectives are met
4 Analyzes technical quality to reject poor quality items
4 Previews old films to evaluate physical condition
4 Analyzes produced visuals to evaluate quality
4 Previews presentation to evaluate presentation
4 Listens to tape to evaluate sound quality
5 Analyzes present curriculum needs to reject irrelevant materials
5 Analyzes future curriculum needs to reject irrelevant materials
5 Compares materials with teachers' needs to reject irrelevant items
5 Combines factors to eliminate obvious rejects
5 Designs evaluation forms to evaluate effectiveness of course
5 Analyzes program to assess logical development
5 Evaluates slides and tape to improve quality of material
5 Evaluates take to accept or reject film
5 Observes run-through to suggest improvements in film
5 Views material to do initial screening
Operates movie projector to preview film
4 Plays back videotape to check quality of recording
5 Pilot tests to evaluate effectiveness of materials
5 Teaches course to evaluate effectiveness of materials
5 Observes student behavior to evaluate presentation effectiveness
5 Analyzes question/answers to evaluate presentation effectiveness

ASSESSMENT OF DEVICES

5 Discusses hardware systems to evaluate effectiveness
5 Performs cost analysis to recommend equipment
5 Compares unit product cost to determine product competitiveness
5 Observes hardware systems to evaluate effectiveness
5 Evaluates new equipment to assess compatibility

SUPPORT-SUPPLY OUTCOMES.

MAINTENANCE OF EQUIPMENT/MATERIALS

4 Analyzes repair history to identify equipment operation problems
Inspects returned materials to check for damage
Inspects returned equipment to check for damage
Cleans lenses on projectors to keep in working order
Cleans AV equipment to keep in working order
Replaces jackets on records to keep clean
Operates air compressor to remove dust from projector
Cleans off points and rollers to maintain film inspector
Puts plastic jackets on books to protect materials
Cleans and dusts materials to maintain condition
Uses cotton swabs and alcohol to clean heads on videotape recorder
Cleans and refills diazo copier to maintain
Refills printing solution to maintain offset machine
Cleans rollers to maintain offset machine
Cleans work area to keep clean/organized
Demagnetizes heads on recorders to keep in working order
Sprays controls in console to clean
Oils AV equipment to keep in working order
Cleans language lab equipment to ensure good working order
Changes projector bulbs and fuses to maintain in working order
4 Maintains electrical systems to ensure working order

PICKING UP AND DELIVERY OF EQUIPMENT AND MATERIALS

Marks list for packer to inform of materials needed
Gives instructions to custodian to move heavy equipment
Calls custodian to have materials delivered
3 Calls supplies department to request table and screens delivery
Selects specified equipment to take to classroom
Loads van with equipment to deliver to location
Unloads truck to deliver equipment
Wheels truck to classroom to deliver equipment
Uses checklist to locate materials for delivery
Picks up and carries boxes to load in van
Packs filmstrips in mailing tube to prepare for delivery
Wheels dollies to deliver equipment
Carries equipment to classroom to deliver to classroom
Loads equipment on cart to deliver to conference room
Pushes cart to deliver to conference room
Unloads equipment to deliver to conference room
Packages materials to prepare for delivery
Packs films in box to return to library
Packs up equipment to return to AV center
Carries film to viewing room to await showing
3 Drives to location to deliver equipment
3 Drives car to pick up defective equipment
3 Drives car to deliver repaired equipment

REPAIR OF EQUIPMENT

3 Calls repairman to request repair of equipment
4 Assigns work to assistants to have equipment repaired
Selects new tubes to replace defective tubes
Tests projector fan to ensure working order
Uses tube tester to test tubes
Replaces needle to restore working order
Uses stroboscopic disc to check turntable speed
Removes stuck copies in copier to restore operating condition
Changes bulbs in overhead projector to restore working order
Repairs lecterns to restore working order
Replaces fuse to restore working order
Replaces tubes to restore working order
Operates equipment to test repair
Operates equipment to test reported malfunction
4 Repairs television receivers to restore working order
4 Repairs language lab console to restore working order
4 Repairs electrical systems to restore working order
4 Repairs CCTV studio equipment to restore working order
5 Repairs FM transmitter to restore working order

KEEPING OF REPAIR RECORDS

Writes data on repair form to keep record of repair
Writes information on card to keep record of repair
Writes information on card to record damaged materials
Lists equipment repaired weekly to keep weekly records
Lists equipment repaired daily to keep daily records
Writes information on card to record periodic maintenance
3 Writes information on each repair to maintain repair history

REPAIR AND INSPECTION OF MATERIALS

Carries films to work area to prepare for inspection
Operates film inspector to inspect and repair film
Inspects returned materials to check for damage
Removes damaged materials to keep from circulation
Visually inspects tapes to check for breaks

KEEPING OF EQUIPMENT INVENTORY

Copies information on card to prepare inventory card
Copies information on order form to mail to library
Lists equipment received to compile new equipment inventory
Copies information from schedule cards to list equipment holdings
Compares holdings with inventory to check accuracy of inventory
Operates typewriter to list inventory of holdings
3 Copies from inventory to list equipment and materials

LABELLING OF EQUIPMENT AND MATERIALS

Copies information from file card to identify machines
Files card in equipment file to have record of machine
Replaces labels on equipment to insure identification
Stencils label on equipment to identify materials
Stamps ownership mark on materials to identify materials
Ties tag on machine to identify machine
Affixes code number on chart to identify
Affixes code number on chart to identify materials
Assigns code number to chart to keep record
Labels kits of materials to identify materials
Labels cartridges to identify for future use
Puts label on boxes to identify boxes

STORAGE OF EQUIPMENT AND MATERIALS

Writes shelf list cards to identify location of materials
4 Gives instructions to have old film destroyed
5 Supervises personnel to store equipment/materials
4 Analyzes extant materials to remove out-of-date materials
Places inspected films on shelves to store for future use
Carries equipment to room to store equipment
Unpacks returned filmstrips to return to storage
Sorts materials to prepare for shelving
Places materials on shelves to store for next use
Replaces equipment on shelves to store for future use
Carries boxes to store room to store boxes

VERIFICATION OF ORDERS/LISTS

4 Calls producer to ascertain correct title
3 Checks catalog notation to insure accuracy
Compares equipment with purchase order to ensure order is correct
Compares list with past list to check accuracy
Reads catalog to verify citation of film
Checks title and number of film to insure accuracy
Checks student schedule to identify correct assignment
3 Uses reference books to check accuracy of film notation

COMPILING OF FILES/CHECKLISTS

3 Files references by subject area to compile materials file
5 Writes briefing guide to provide briefing guidelines
5 Selects articles on media to compile library of materials
5 Analyzes crucial operating factors to design readiness checklist
5 Lists equipment operation problems to list crucial operating factors
5 Analyzes catalogs and files to list related materials

TRANSMISSION OF VIDEOTAPES

5 Observes builders at work to ensure specifications are met
Operates videotape recorder to transmit programs from network
Schedules time and date to arrange for CCTV broadcast
3 Prepares VTR set-up to ready for playback
3 Operates VTR to playback recording

DISTRIBUTION/CIRCULATION OF MATERIALS

Reads daily schedule to identify materials needed
4 Coordinates materials procurement to provide needed audio and visuals
5 Supervises personnel to redistribute equipment/materials
Pastes date-due slips in books to prepare for circulation
Sets up circulation desk daily to prepare for distribution
Pre-stamps date due cards to prepare for distribution
Matches films with order slips to assign film to requestor
Checks lists to determine if materials available
Locates requested material to assist requestor
4 Plans new routing list to improve circulation

SCHEDULING OF MATERIALS/EQUIPMENT/FACILITIES

Files copy of schedule card to keep record
Writes work order to record operation needed
3 Schedules materials to reserve for use
Writes date scheduled to record date needed
Writes requestor's name to reserve materials
Writes in time chart to schedule conference rooms
Copies information to worksheet to reserve projectionist
Files copy of work order to have record of operation
3 Schedules facilities to reserve for use
Discusses with requestor to schedule preview time
Talks with requestor to get information on materials needs
Calls room coordinator to schedule conference rooms
Calls tutor to arrange for student session
Calls sound studio to schedule time for recording
Locates schedule card to record date needed
Chooses alternate date to reserve materials
Checks schedule book to determine if materials available
3 Schedules bus and driver to reserve for field trip
3 Checks materials for learning activities to check if ready for student
4 Plans new scheduling system to improve scheduling
3 Schedules equipment to reserve for use

PREPARATION FOR UTILIZATION OF FACILITIES/EQUIPMENT

5 Visits presentation location to review physical facilities
3 Discusses with instructor to identify program need
4 Discusses with presentor to clarify presentation details
5 Discusses with instructor to determine room size and character
3 Designs cue sheet to assist projectionist and speaker
3 Surveys room to plan VTR set up
4 Organizes materials in groups to prepare for evaluation sessions
Sets up appropriate equipment to prepare for conference session
Arranges furniture to prepare for conference and preview
Loads projector to prepare for use
Lays out materials in lab to prepare for student use
Turns on equipment to prepare for student use
3 Sets up console to prepare for instructor

CATALOGING OF MATERIALS

Writes data in catalog to update catalog
Files catalog cards to keep records
Lists new materials in catalog to update catalog
4 Writes short description of film to catalog film
Compares title with catalog to determine if already catalogued
Determines standard notation to prepare to catalog
3 Lists subject headings to materials to identify them
3 Assigns sequential control numbers to catalog new materials
3 Assigns subject headings to classify materials
3 Removes out-of-date cards to keep catalog files current
5 Adapts commercial catalog cards to catalog to local needs
5 Checks classification list to cross-index materials
5 Reads new materials to classify materials
4 Reads review of materials to cross-index materials
5 Reads curriculum guides to classify materials in curriculum areas

OPERATION OF COMPUTER TERMINAL

Operates computer terminal to print out tutorial strategy
Operates computer terminal to list messages received
Operates computer terminal to make program tapes
Operates computer terminal to delete old programs

INSTALLATION OF EQUIPMENT

3 Builds soundproof ceiling to equip CCTV studio
5 Hooks up equipment to install equipment
Unpacks equipment to prepare for installation
4 Reads physical schematic to determine equipment layout
4 Examines floor plan to determine location for components
4 Reads wiring diagrams to determine electrical layout
4 Reads specifications to determine contents and number

PREPARATION FOR MULTI-MEDIA PRESENTATION

Stands up screens to prepare for presentation
Places tables in position to prepare for presentation
Tapes extension cords to floor to prepare for presentation
Tests control device to prepare for presentation
3 Sets up equipment to prepare for multiscreen presentation
3 Sets up control device to prepare for presentation
4 Analyzes physical facilities to determine placement of equipment and audience
4 Runs through presentation to check for technical accuracy

ORDERING OF FILMS/MATERIALS/EQUIPMENT

Mails order sheets to order films
3 Discusses with student to arrange time for learning activity
3 Calls teacher/students to arrange for human components of learning activity
3 Calls instructional materials center to schedule materials for learning activity
3 Calls producer to obtain sample components
3 Calls equipment supplier to request equipment delivery and set up
4 Analyzes usage figures to project equipment needs
4 Analyzes equipment needs to plan equipment acquisition

LOCATION OF MATERIALS

5 Analyzes materials file to select references
5 Researches materials files to locate appropriate materials

ORDERING OF REPLACEMENT MATERIALS

Lists missing equipment to request replacements
Lists missing items to prepare replacement list
Writes to central office to request replacement items
3 Writes order forms to order spare parts
4 Calls producers to request replacement materials
Observes stock of paper to insure adequate supplies
4 Estimates spare parts needed to stock repair service

TRANSMISSION OF RADIO BROADCASTS

Reads aloud to announce station identification
Reads aloud to make radio announcements
Observes audiometers to monitor broadcast signal
Operates broadcast console to switch program sources
Arranges tapes in rack to prepare to broadcast

UTILIZATION OUTCOMES.

PREPARATION FOR LEARNING ACTIVITIES

Prepares materials and equipment in lab to prepare for student use
4 Travels to school to be available to students

PRESENTATION OF INFORMATION

3 Schedules meeting with director to show presentation
3 Schedules meeting with writer to show presentation
Operates media equipment to present information
Operates slide projector to show presentation
Operates equipment to show multiscreen presentation
3 Reads script and shows slides to show raw presentation to client
5 Instructs students to explain concept/information
5 Speaks to group to provide input where appropriate
5 Speaks to students to present lecture information

UTILIZATION-DISSEMINATION OUTCOMES.

DISTRIBUTION OF INFORMATION

Mails copy of work order to inform instructor
Sorts incoming mail to distribute in boxes
Circulates flyers to inform staff of new products
Lists operating flaws in equipment to inform repair technician
Writes notifications to inform teacher of film arrival
Distributes information to get information to employees
3 Transmits report to funding source to disseminate research findings
3 Collates project literature to give materials to visitor
4 Writes notice to publicize demonstration
4 Compiles list of recommended equipment to inform staff
4 Lists recommended equipment per unit to inform staff
4 Lists recommended manufacturers to inform staff
4 Writes instructions to inform production units
5 Writes memos to field personnel to inform on progress of course
5 Writes report to management to inform on progress of course
5 Assesses cost benefits of training to inform management
5 Translates technical language to describe project to management/customer
5 Writes report on project to present progress to management/customer
5 Edits report on project to disseminate findings
5 Develops new procedures to route information
5 Writes reports to disseminate findings
5 Conducts briefings to inform on progress of course
4 Writes summary of data to report to supervisor
Distributes messages received to inform staff
Sends notifications to requestor to inform of date scheduled
3 Sends reactions to producers to inform producers
3 Sends suggestions to director to inform director of needs
4 Circulates information to inform on materials and equipment

DISCUSSION (TWO-WAY INTERACTION)

4 Uses telephone to answer service questions
Converses with supervisor to discuss repair
5 Discusses with client group to answer questions regarding evaluation
5 Discusses microteaching principles to prepare teacher for taping
5 Discusses with students to clarify issues
5 Discusses with visitor to answer questions
5 Listens to visitor/student/teacher discussion to provide help if needed
5 Discusses with visitor to summarize activities
5 Discusses with students to clarify media principles
5 Discusses with student to explain different activities
5 Critiques videotape with teacher to point out teaching behavior
5 Observes teacher teaching to identify changes in behavior
5 Conducts seminar to encourage discussion

TEACHING (FORMAL INTERACTION)

5 Designs conference to inform management of changes
4 Gives instructions to students to orient them to pilot test
4 Discusses with students to clarify elements of composition
4 Discusses with students to clarify lenses/setting decisions
4 Supervises use of instamatic to provide experience in photography
4 Discusses camera pictures to clarify principles of composition/setting
5 Discusses with teacher to suggest behavior improvements
5 Speaks to management and customer to present project progress
5 Supervises training conferences to teach new teacher behaviors

4 Gives directions to students to assist in equipment operation
5 Gives lectures to inform students
5 Teaches over CCTV to instruct in media production
5 Advises students to assist in making media production
5 Advises students to assist in multi-media presentations
5 Administers pre- and post-tests to reinforce teaching
3 Shows how to replace bulbs to inform aides
3 Explains operation of equipment to inform instructor
4 Teaches preventive maintenance to inform repairmen
3 Shows how to operate dictaphone to instruct students
4 Demonstrates equipment operation to train student workers
5 Describes microteaching to inform student teachers
5 Explains tasks to be done to train staff
5 Encourages writing of objectives to teach thru active learning
5 Encourages writing of objectives and tests to teach through active learning

EXPLANATION (INFORMAL INTERACTION)

Writes date and name on card to inform requestor
3 Uses telephone to answer routine questions
4 Converses with assistants to advise on repairs
4 Talks with teacher to inform of procedure
4 Discusses with teacher to explain references sources
4 Speaks to visitor or superior to receive request for information
4 Calls producers to inform of mistakes in product
4 Calls colleagues to inform of staff needs
4 Calls placement agency to inform of staff needs
4 Speaks to technical workers to inform of deadlines
5 Discusses with client group to create non-threatening evaluation
5 Discusses with student to explain logistic aspects of learning activity
5 Discusses with student to explain unique components of learning activity
5 Discusses with student to explain assessment procedures
5 Discusses with student to explain handling of materials
5 Discusses with student/parent to explain student progress
5 Discusses with teacher to explain student behavior not being met
5 Discusses with teacher to explain teacher behavior causing problem
5 Discusses with principal to explain suggestions made to teacher
5 Discusses with teacher to make further suggestions
5 Discusses with product planners to inform of educational needs
5 Speaks to technical workers to explain PERT chart
5 Speaks to student to explain post-test
5 Speaks to teacher to receive request to consult
5 Speaks to architects in person to explain facilities needs
Drives visitor to school to show project in operation
5 Instructs group to explain facilitator role
5 Instructs group to explain content/process difficulty
5 Advises students to inform on courses to take
4 Discusses with teachers to inform on materials and equipment
5 Instructs client group to explain purposes of evaluation
5 Instructs client group to explain role of evaluator
5 Instructs customer in II to define problems in process
5 Instructs customer in II to define changed concepts of instruction
5 Instructs customer in II to define effects on curriculum
5 Instructs customer in II to define new role of testing
5 Instructs visitor to describe layout of classroom
5 Serves on committees to disseminate information on media
5 Instructs teacher to suggest alternative behaviors
5 Instructs supervisor to explain use of matenal
5 Advises teachers to inform of materials available
5 Advises on film making techniques to inform staff

Appendix C

A Taxonomy of Tasks...

Reproduced below are excerpts from a document entitled (in part) A Taxonomy of Tasks and a Competency-Based Training Program for .... The tasks tend to be rather general and the competencies, though desirable, so nonspecific that they could fit a large number of jobs. We might put the question this way: After looking at the taxonomy of tasks, can you deduce what job is being described? The answer can be found below--at the end of this Appendix--where the full citation and publisher provide the answer.

The point we are trying to make in this Appendix is that the "competency-based" label tends to promise more than it delivers, that there are enormous gaps between the promise of the concept and its execution. We are not trying to ridicule this particular example because it is our finding to date that the CBE concept is relatively easy to ascribe to manual tasks and becomes increasingly difficult to apply to jobs which have a large component of creativity, call for personal and professional judgment, or other humanistic considerations (i.e., many of the qualities we seek in good teachers, no matter how difficult they may be to quantify, measure or assess).

ADMINISTRATIVE TASK TAXONOMY +

CATEGORY 1: COORDINATING

RANK WITHIN CATEGORY	TASK	IDEAL (+) SCORE	OVERALL RANK N=66	SELF RATING SCALE	CHECK IF TRAINING IS DESIRED
*1.	Builds interpersonal communications to enhance group supportiveness.	4.55	14	1 2 3 4 5 N/A	☐
**2.	Involves those affected by policies, etc. in their development.	4.51	18	1 2 3 4 5 N/A	☐
**3.	Organizes and uses task forces, work groups, etc.	4.37	34	1 2 3 4 5 N/A	☐
*4.	Identifies social system factors which make for productive work.	4.12	52	1 2 3 4 5 N/A	☐

* First priority training items=2
** Second priority training items=2

+ Here, and in many other places throughout this appendix, we have deleted the words which identify the particular job or task being described.

CATEGORY 2: STAFF MANAGEMENT AND DEVELOPMENT

RANK WITHIN CATEGORY	TASK	IDEAL SCORE	OVERALL RANK N=66	SELF RATING SCALE	CHECK IF TRAINING IS DESIRED
*1.	Motivates staff	4.72	2	1 2 3 4 5 N/A	☐
*2.	Informs/involves staff	4.70	4	1 2 3 4 5 N/A	☐
3.	Selects staff	4.62	6	1 2 3 4 5 N/A	☐
*4.	Evaluates individual staff performance	4.56	11	1 2 3 4 5 N/A	☐
5.	Orients new staff	4.50	21	1 2 3 4 5 N/A	☐
*6.	Communicates with staff Re: work/issues.	4.46	27	1 2 3 4 5 N/A	☐
**7.	Provides recognition and rewords for staff, individually and collectively.	4.45	28	1 2 3 4 5 N/A	☐
**8.	Uses unique interests and abilities of staff.	4.31	38	1 2 3 4 5 N/A	☐
*9.	Conducts frequent and well organized meetings.	4.30	39	1 2 3 4 5 N/A	☐
*10.	Resolves conflicts	4.25	44	1 2 3 4 5 N/A	☐
*11.	Helps staff attain own inservice training needs.	4.24	46	1 2 3 4 5 N/A	☐
*12.	Has plans to achieve short term objectives.	4.21	49	1 2 3 4 5 N/A	☐
13.	Specifices job descriptions.	4.20	50	1 2 3 4 5 N/A	☐
**14.	Defines role.	4.03	60	1 2 3 4 5 N/A	☐
**15.	Designs staff inservice programs.	4.02	61	1 2 3 4 5 N/A	☐

* First priority training items = 8
** Second priority training items = 5

CATEGORY 3: FISCAL MANAGEMENT

RANK WITHIN CATEGORY	TASK	IDEAL SCORE	OVERALL RANK N=66	SELF RATING SCALE	CHECK IF TRAINING IS DESIRED
**1.	Determines fiscal impact of policy.	4.47	24	1 2 3 4 5 N/A	☐
*2.	Determines cost-effectiveness of programs.	4.37	31	1 2 3 4 5 N/A	☐
3.	Prepares operating budget.	4.34	36	1 2 3 4 5 N/A	☐
4.	Manages the budget.	4.22	47	1 2 3 4 5 N/A	☐
5.	Manages monies for programs.	4.06	55	1 2 3 4 5 N/A	☐
6.	Prepares program reports as required by agencies from which funds are obtained.	4.04	58	1 2 3 4 5 N/A	☐
7.	Writes or coordinates the writing of proposals for aid.	3.72	66	1 2 3 4 5 N/A	☐

* First priority training item=1
** Second priority training item=1

CATEGORY 4: EVALUATION

RANK WITHIN CATEGORY	TASK	IDEAL SCORE	OVERALL RANK N=66	SELF RATING SCALE	CHECK IF TRAINING IS DESIRED
*1.	Appraises effectiveness of own leadership behavior.	4.51	17	1 2 3 4 5 N/A	☐
*2.	Maintains continuous evaluation process of state's programs.	4.44	29	1 2 3 4 5 N/A	☐
*3.	Both formatively and summatively monitors programs.	4.32	37	1 2 3 4 5 N/A	☐
*4.	Evaluates effectiveness of service delivery models.	4.27	42	1 2 3 4 5 N/A	☐
*5.	Involves concerned groups in evaluation of goals, strategies, and program effectiveness.	4.22	48	1 2 3 4 5 N/A	☐
*6.	Evaluates degree of achievement of goals and objectives.	4.17	51	1 2 3 4 5 N/A	☐
**7.	Appraises effectiveness of training programs.	4.02	62	1 2 3 4 5 N/A	☐

* First priority training items=6
** Second priority training items=1

CATEGORY 5: PLANNING

RANK WITHIN CATEGORY	TASK	IDEAL SCORE	OVERALL RANK N=66	SELF RATING SCALE	CHECK IF TRAINING IS DESIRED
** 1.	Uses a wide range of inputs in determining programs.	4.62	7	1 2 3 4 5 N/A	☐
** 2.	Establishes goals & priorities on the basis of philosophy, purposes, &goals.	4.61	8	1 2 3 4 5 N/A	☐
** 3.	Develops priority long and short range plans for program development.	4.56	10	1 2 3 4 5 N/A	☐
** 4.	Develops a plan for assessing services.	4.56	12	1 2 3 4 5 N/A	☐
5.	Develops regulations for program management and delivery of services	4.56	13	1 2 3 4 5 N/A	☐
6.	Plans, organizes and implements comprehensive programs.	4.54	15	1 2 3 4 5 N/A	☐
*7.	Uses rational decision making models in managing procedures.	4.54	16	1 2 3 4 5 N/A	☐
*8.	Determines needs based on formal, on going need assesment procedures.	4.49	22	1 2 3 4 5 N/A	☐
**9.	Uses technical management skills (PERT, MBO)	4.11	54	1 2 3 4 5 N/A	☐
** 10.	Assess longe range staffing needs of	3.84	64	1 2 3 4 5 N/A	☐
** 11..	Develops models for implementtation in	3.79	65	1 2 3 4 5 N/A	☐

* First priority training items = 2
** Second priority training items = 7

CATEGORY 6: PROGRAM DEVELOPMENT

RANK WITHIN CATEGORY	TASK	IDEAL STATE DIRECTOR SCORE	OVERALL RANK N=66	SELF RATING SCALE	CHECK IF TRAINING IS DESIRED
**1.	Maximally uses fiscal, agency, legal & personnel resources.	4.69	5	1 2 3 4 5 N/A	☐
2.	Periodically reviews & revises existing policies.	4.50	19	1 2 3 4 5 N/A	☐
3.	Interprets impact of legislation, Attorney General Opinions, and case law.	4.50	20	1 2 3 4 5 N/A	☐
4.	Converts legislation into program standards and guidelines.	4.48	23	1 2 3 4 5 N/A	☐
5.	Converts "due process" court decisions into program policies.	4.46	25	1 2 3 4 5 N/A	☐
**6.	Converts program and service delivery concepts into model legislation.	4.35	35	1 2 3 4 5 N/A	☐
7.	Provides uniform descriptions of handicapping conditions to	4.28	41	1 2 3 4 5 N/A	☐
8.	Reviews, approves, disapproves proposals for funding.	4.05	57	1 2 3 4 5 N/A	☐

* First priority training item=0
** Second priority training items=2

CATEGORY 7: ORGANIZING

RANK WITHIN CATEGORY	TASK	IDEAL SCORE	OVERALL RANK N=66	SELF RATING SCALE	CHECK IF TRAINING IS DESIRED
**1.	Uses appropriate state/ regional/federal resources in design and implementtation of programs.	4.46	26	1 2 3 4 5 N/A	☐
**2.	Determines the relationship of units with other units and related agencies.	4.25	45	1 2 3 4 5 N/A	☐
**3.	Determines relationship of unit with regional and national centers.	4.12	52	1 2 3 4 5 N/A	☐
4.	Defines role of support programs and uses competencies of medical practioners, psychologists and therapists, etc.	3.99	63	1 2 3 4 5 N/A	☐

* First priority training item=0
** Second priority training item=3

CATEGORY 8: COMMUNICATIONS - LOCAL AND NATIONAL

RANK WITHIN CATEGORY	TASK	IDEAL SCORE	OVERALL MEAN N=66	SELF RATING SCALE	CHECK IF TRAINING IS DESIRED
1.	Influences leadership and power sources to positive attitudes towards	4.75	1	1 2 3 4 5 N/A	☐
2.	Generates public acceptance and support of in the state.	4.70	3	1 2 3 4 5 N/A	☐
3.	Communicates with all directors of throughout the state.	4.60	9	1 2 3 4 5 N/A	☐
** 4.	Communicates regularly with related agency heads.	4.42	30	1 2 3 4 5 N/A	☐
**5.	Communicates with all related organizations in state.	4.37	32	1 2 3 4 5 N/A	☐
6.	Advises groups on laws, regulations and guidelines relating to	4.37	33	1 2 3 4 5 N/A	☐
**7.	Uses a variety of forms & national groups concerned with	4.29	40	1 2 3 4 5 N/A	☐
8.	Participates in major state and national groups concerned with	4.27	43	1 2 3 4 5 N/A	☐
**9.	Gives mass media presentations.	4.05	56	1 2 3 4 5 N/A	☐
**10.	Prepares periodic reports on the "State of the Art" of services state wide.	4.04	59	1 2 3 4 5 N/A	☐

*First priority training items=0

**Second priority training items=5

Source: William V. Schipper and Leonard A. Kenowitz, A Taxonomy of Tasks and a Competency-Based Training Program for State Level Special Education Administrators, (Washington: National Association of State Directors of Special Education), 1974.

GPO 906-887

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4. Gatekeepers in Education: A Report on Institutional Licensing, April 1975. (SP 008 970)*
5. Evaluation of Education: In Need of Examination, November-December 1973. (ED 084 239)*
6. Vocational Education: Staff Development Priorities for the 70's, March 1973. (Full report: ED 084 240; Summary: ED 084 401)*
7. People for the People's College, Spring 1972. (ED 066 432)*
8. Report on Educational Renewal, March 1972.
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10. Leadership and Educational Needs of the Nation, October 1969.

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Footnotes

1. Stanley Elam, Performance-Based Teacher Education: What is the State of the Art?, (Washington: American Association of Colleges for Teacher Education, 1971), pp. 6-7.

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5. B. Rosenshine and N. Furst, "Research in Teacher Performance Criteria," Research in Teacher Education, edited by B.O. Smith, (Englewood Cliffs, N.J.: Prentice-Hall, 1971), pp. 37-72.

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9. Edward L. Angus and C. Earl Leininger, "Experimental Learning in a Competency Based Curriculum: The Question of Quality Control of Education Standards," paper prepared for Conference on Quality Control in Higher Education, Antioch College, Columbia, Maryland, November 10-12, 1974.

10. Ibid.

11. Association for Educational Communications and Technology, "Competencies for Technicians in Media Management," Audiovisual Instruction, XIX, No. 9, (November 1974), pp. 56-64.

12. Phyllis Hamilton, Competency-Based Teacher Education, Education Policy Research Center (Menlo Park: Stanford Research Institute) July 1973.